LIVESTOCK WATERING   NRCS-NJ DATA SHEET

Landowner: _____   **Date:** _____

County: _____   **Twp:** _____   **Completed By:** _____

INDICATE NUMBER OF HEAD IN EACH ANIMAL GROUP:

No. Head	LIVESTOCK DAILY WATER REQUIREMENTS – Gallons per head per day			
	Species	**Penned**	**Pastured**	**NRCS Std 614**
	Dairy Cow – Lactating	20-35	25	25
	Dairy Heifer or Yearlings	6-15	10	N/A
	Beef Cattle	6-15	10	12
	Cow/Calf Pair	12-20	15	N/A
	Swine	N/A	N/A	4
	Horse	N/A	N/A	12
	Sheep / Goats / Llama	1-3	2	2

TOTAL DAILY WATER REQUIREMENT

Species   _____   _____   _____   _____

Number of Head   _____ ea   _____ ea   _____ ea   _____ ea

Gallons/Head/Day[1] _____   _____   _____   _____

Gallons/Day Total[2] _____ gpd   _____ gpd   _____ gpd   _____ gpd

BASIC SYSTEM INFORMATION

Will waterers be permanent (winter use) or seasonal? ☐ Permanent   ☐ Seasonal

If seasonal, will water supply lines be buried or above ground? ☐ Buried   ☐ Above Ground

To highest waterer? Distance _____   Elevation _____

To farthest waterer? Distance _____   Elevation _____

Operator interested in alternative watering methods? ☐ Solar Pump   ☐ Ram Pump[3]

☐ Nose Pump[4]   ☐ Wind Power

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[1] Use NRCS Std 614 values from table above. Use other references if not listed for animals to be watered.

[2] Multiply (Number of Head) times (Gallons/Head/Day) for (Total Gallons/Day) for that group.

[3] Ram Pump needs stream site with three feet of fall above the pump and at least 1 gpm flow rate during summer.

[4] Nose Pump maximum distance = 300 feet on flat terrain or 125 feet with a 25 foot elevation difference

WATER SOURCE INFORMATION

Groundwater resources are usually more reliable than surface water, but require power for pumping. Consider condition of existing well water system and impact on other water needs. Surface water sources tend to be less expensive but may have water quality concerns or unreliable flow.

☐ **Existing Well**

Well Location _____

Well or Pump Elevation _____

Pump Information _____ Make _____ Model

Pump Information _____ gpm _____ psi

Pressure Tank Present?   ☐ Yes   ☐ No

Pressure Tank Location: _____

Pressure Tank _____ gallons _____ psi

Existing Supply Line _____ Diameter _____ Type Pipe

Hydrant closest to waterer _____ gpm _____ Pipe Size

☐ **Proposed Well**

Well Location _____

Well Elevation _____

Pressure Tank Proposed?   ☐ Yes   ☐ No

☐ **Stream or Pond** (circle one)

Stream or Pond Elevation _____

Perennial Flow   ☐ Yes   ☐ No

Stream Crossing Needed?   ☐ Yes   ☐ No

☐ **Spring Development**

Perennial Flow   ☐ Yes   ☐ No

Spring Information _____ Elevation _____ Flow Rate

COMMON CONVERSIONS

1 PSI	=	2.31 FEET
1 CFS	=	450 GPM
1 CUBIC FOOT	=	7.48 GALLONS
1 CUBIC FOOT	=	62.4 POUNDS
1 GALLON	=	8.34 POUNDS

DETERMINE NUMBER OF WATERING SPACES REQUIRED:

WATERING SPACES REQUIRED PER PADDOCK		
Herd Watering Pattern[5]	Distance from farthest point in paddock to Watering Facility	Percent of Herd at Waterer
Case I: Individual Watering	Less than 900 feet	5 %
Case II: Group Watering	900 feet or more	10%
Sheep	N/A	100%

Paddock or Field Number				
Maximum Distance, feet				
Watering Pattern	☐ Case I Individ ☐ Case II Group	☐ Case I Individ ☐ Case II Group	☐ Case I Individ ☐ Case II Group	☐ Case I Individ ☐ Case II Group

CASE I:
Individual Watering: Water is available within 900 feet and livestock drink individually:

Spaces   =   _____   x   0.05   =   _____ spaces   Round to: _____ spaces
          (Total number of head)

CASE II:
Group Watering: Distance to water is 900 feet or greater and herd drinks as group:

Spaces   =   _____   x   0.10   =   _____ spaces   Round to: _____ spaces
          (Total number of head)

WATERING SPACES PER TANK:

ROUND TANKS: *(Need 20 inches of the perimeter per space)*

New round tank: Minimum diameter if animals have access to entire perimeter:

Diameter   =   _____ spaces   x   0.53   =   _____ ft diameter   Use: _____ ft. diam min.
               (Watering Spaces)

Existing round tank: Maximum number of watering spaces per tank:

Spaces   =   _____ feet   x   1.88   =   _____ spaces   Need: _____ tanks
          (Diameter of tank in ft)   per tank

RECTANGULAR: *(Need 30 inches of perimeter per space)*

Existing rectangular tank: Maximum number of watering spaces per tank:

Spaces   =   _____ feet   x   _____ feet   x   0.4   =   _____ spaces   Need: _____ tanks
          (Length of tank)   (Width of tank)   per tank

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[5] Animals drink individually when far corner of paddock to the waterer is less than 900 feet. When water is 900 feet or more away, grazed animals tend to drink as a herd and more watering spaces are required.

WATERER TANK CAPACITY RECOMMENDATIONS:

TANK CAPACITY OF WATERER BASED ON REFILL RATE		
Trial	Refill Rate	Tank Capacity (gallons)
1	Instantaneous (2 gpm/space)	Tank capacity can be nominal. Nose pump is feasible.
2	1 hour	2 gallons/animal
3	4 hours	25% of total daily water requirement
4 or Sheep	Greater than 4 hours	100% of total daily water requirement
5	Solar or Unreliable source	200% of total daily water requirement

Trial 1: Tank capacity is not an issue if flow rate is considered instantaneous:

Flow Rate $= \dfrac{}{\text{(Number of spaces)}} \times \dfrac{2\text{ gpm}}{\text{space}} = $ _____ gpm   OK?   ☐ Yes ☐ No

Trial 2: Need minimum tank capacity of 2 gallons per animal if tank can be refilled in one hour:

Tank Size $= \dfrac{}{\text{(Number of animals)}} \times 2\text{ gallons} = $ _____ gallons

Must meet the following minimum refill rate:

Flow Rate $= \dfrac{\text{Volume of Tank}}{60\text{ mins}} = \dfrac{\text{gal}}{60} = $ _____ gpm   OK?   ☐ Yes ☐ No

Trial 3: Need tank capacity of 25% of daily requirement if refill rate is 4 hours:

Tank Size $= \dfrac{}{\text{(Daily Water Requirement)}} \times 0.25 = $ _____ gallons

Must meet the following minimum refill rate:

Flow Rate $= \dfrac{\text{Volume of tank}}{240\text{ mins}} = \dfrac{\text{gal}}{240} = $ _____ gpm   OK?   ☐ Yes ☐ No

Trial 4: Need tank capacity of 100% of daily requirement if refill rate is more than 4 hours:

Tank Size $= \dfrac{}{\text{(Daily Water Requirement)}} \times 1.00 = $ _____ gallons

Must meet the following minimum refill rate:

Flow Rate $= \dfrac{\text{Volume of tank}}{1440\text{ minutes}} = \dfrac{\text{gal}}{1440} = $ _____ gpm   OK?   ☐ Yes ☐ No

Trail 5: Need tank capacity of 2 days for solar pump systems or unreliable water supply:

Tank Size $= \dfrac{}{\text{(Daily Water Requirement)}} \times 2.00 = $ _____ gallons

Must meet the following minimum refill rate:

Flow Rate $= \dfrac{\text{Volume of tank}}{1440\text{ minutes}} = \dfrac{\text{gal}}{1440} = $ _____ gpm   OK?   ☐ Yes ☐ No